

इंटरनेट

मानक

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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 11644 (1999): Tolerances of Form and Position for Aerospace Bolts and Screws [TED 14: Aircraft and Space Vehicles]



“ज्ञान से एक नये भारत का निर्माण”

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“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
वायुआकाशीय काबले और पेंच बनाने और स्थिति की छूटें
(पहला पुनरीक्षण)

Indian Standard
TOLERANCES OF FORM AND POSITION FOR
AEROSPACE BOLTS AND SCREWS
(*First Revision*)

ICS 49.030.20

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Aircraft and Space Vehicles Sectional Committee had been approved by the Transport Engineering Division Council.

This Indian Standard was published in 1986. The revision of this standard has been made to bring it inline with ISO 7913 : 1994 'Aerospace — Bolts and screws, metric — Tolerances of form and position', issued by the International Organization for Standardization (ISO).

The committee responsible for preparation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TOLERANCES OF FORM AND POSITION FOR AEROSPACE BOLTS AND SCREWS (*First Revision*)

1 SCOPE

This Indian Standard specifies the tolerances of form and position applicable to all types of metric bolts and screws in nominal diameter range 3 to 24 mm used in aerospace construction.

2 REFERENCES

2.1 The following standards contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
8000	Geometrical tolerancing on technical drawings:
(Part 1) : 1985	Tolerances of form orientation, location and run-out and appropriate geometrical definitions (<i>first revision</i>)
(Part 2) : 1992	Maximum material principles (<i>first revision</i>)

3 CHARACTERISTICS

The description of characteristics for various types of bolts and screws shall conform to Table 1. The tolerances of form and position shall be as given in the illustrations in the table. All tolerance, descriptions and illustrations conform to IS 8000 (Part 1) and IS 8000 (Part 2). All tolerance values have been expressed in millimetres.

Table 1 Description and Illustration of Bolts and Screws
(Clause 3)

Sl No.	Description	Illustration
3.1	Perpendicularity of bolt underhead bearing surface	
3.2	Straightness of total bolt shank length	
3.3	Run-out of the external flange diameter of bihexagonal and spline head bolts	

Table 1 (Continued)

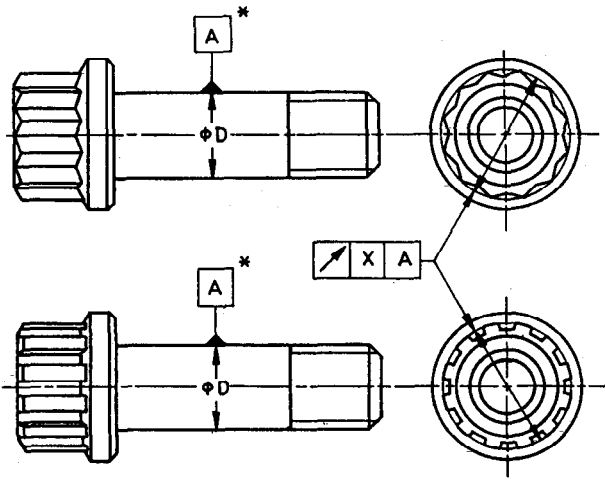
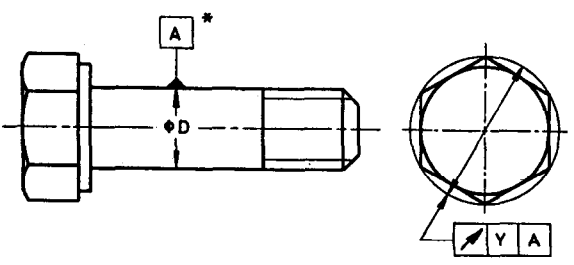
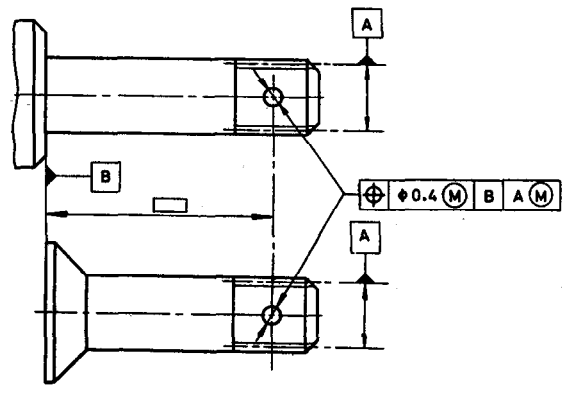
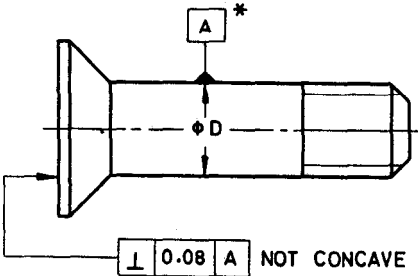
Sl No.	Description	Illustration
3.4	Run-out of the external wrenching diameter of bihexagonal and spline head bolts	
3.5	Run-out of the width across corners of hexagonal head bolts	
3.6	Position of split pin hole in bolt thread	

Table 1 (Continued)

Sl No.	Description	Illustration
3.7	Run-out of the conical or cylindrical portion of pan head bolts	
3.8	Position of locking wire hole in hexagonal, bihexagonal and spline head bolts	
3.9	Run-out of the conical portion of countersunk head bolts	

Table 1 (Concluded)

Sl No.	Description	Illustration
3.10	Perpendicularity and concavity at the top of countersunk head bolts	

*For bolts and screws with unthreaded shank length:

- $\geq D$, Datum *A* is the unthreaded shank and can be located anywhere within a maximum length equal to diameter *D* from the head shank intersection.
- $< D$ or threaded to head: Datum *A* is the pitch diameter and can be located anywhere within a maximum length equal to diameter *D* nearest the head-shank intersection.

where

D = nominal thread diameter.

M = based on maximum material principle, for details, see IS 8000 (Part 2).

4 DIMENSIONAL TOLERANCES

Dimensional tolerances shall conform to Table 2 for nominal thread diameter from 3 to 24 mm. All tolerance values are expressed in millimetres.

Table 2 Dimensional Tolerances Values

Nominal Thread Diameter	<i>V</i> **		<i>X</i>	<i>Y</i>	<i>Z</i>
	Short and Medium Length Thread	Long Length Thread and Threaded to the Head			
3	0.002	0.003	0.08	0.15	0.11
3.5			0.09	0.18	0.12
4			0.1	0.2	0.14
5			0.13	0.25	0.18
6			0.15	0.3	0.21
7			0.18	0.35	0.25
8			0.2	0.4	0.28
10	0.001 5	0.002 5	0.25	0.5	0.35
12			0.3	0.6	0.45
14			0.35	0.7	0.49
16			0.4	0.75	0.56
18			0.45		0.63
20			0.5		0.7
22	0.001	0.002	0.55		0.75
24			0.6		

*Parameter '*V*' is dimensionless (millimetre per millimetre).

ANNEX A

(Foreword)

COMMITTEE COMPOSITION

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Director (Transport Engineering)

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Directorate General of Civil Aviation, New Delhi

Indian Airlines, New Delhi

Indian Institute of Science, Bangalore

National Aeronautical Laboratory (CSIR), Bangalore

Hindustan Aeronautics Ltd (Aircraft Design Bureau), Bangalore

Centre for Military Airworthiness and Certification (CEMILAC), Bangalore

Bharat Dynamics Ltd, Hyderabad

Vikram Sarabhai Space Centre, Trivandrum

Hindustan Aeronautics Ltd, Bangalore

Gas Turbine Research Establishment, Bangalore

Dunlop India Ltd (R & D), Mumbai

Ministry of Defence (DRDL), Hyderabad

Hindustan Aeronautics Ltd, Lucknow

Aeronautical Development Agency (ADA), Bangalore

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Member Secretary

SHRI P. P. SINGH

Joint Director (Transport Engineering), BIS

Accessories, Fittings and Fasteners for Aircraft and Space Vehicles Subcommittee, TED 14 : 2

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Bashi Aerospace Pvt Ltd, Bangalore

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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